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Ethical work and Human Gene Therapy

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This poster sets out to explore the types of ethical work that have gone into Human Gene Therapy. Drawing inspiration from the recent ethical turn in anthropology, it seeks to open up questions of ethics and move beyond the idea of the ethical as synonymous with standardised guidelines. This fits into an ongoing endeavour to understand how human gene therapy, as a highly experimental medico-scientific field, was originally established and subsequently sustained, despite several high profile patient deaths and almost a decade of slow progress. I point to three different types of ethical work that enabled the field's continuation: ethical boundary work; the use of existing bioethical standards; and an underlying ethical imperative.

1972 Recombinant DNA technology first appears[1]

1974 Berg letter to *Science*, moratorium on several kinds of rDNA research[2]

1976 'Asilomar 2': guidelines made for rDNA research, moratorium lifted[3]

1980 Illicit human gene therapy protocol performed by Martin Cline, UPenn[4]

1982 President's Commission on gen. engineering publishes *Splicing Life*[6]

1989 First human gene transfer experiment (cell marking)[7]

1990 First human gene therapy begins for ADA-SCID[8]

Mid-90s Slow progress noted, critiques of rush to clinic

1999 Patient dies in UPenn trial. Many trials globally halted for assessment.

2002 Two patients in French trial get leukemia, one dies.

2003 First gene therapy gains market approval in China

2012 First Euro gene therapy, Glybera, approved

ANTHROPOLOGY & ETHICS

Anthropologists[10,11,12] have shown that while ethical standards (e.g. informed consent, risk-benefit analysis) make ethics operable, they do not *encompass* ethical practice. Rather, ethics are *embedded* in the ongoing everyday work of striving to be a good (or good enough) person amongst others; they *manifest* as forms of future-making amidst conditions of present uncertainty.

1 ETHICAL BOUNDS

In the early stages of human gene therapy, concerns were voiced about the safety and viability of the potential field. A key strategy that enabled the field to get underway was the *ethical boundary work* done (primarily by scientific actors) to demarcate acceptable from unacceptable gene therapy.

W. French Anderson made two demarcations, which marked out a space for an ethically acceptable field of gene therapy. These were: *somatic* vs. germ line gene therapy, and gene therapy for purposes of *therapy* vs. enhancement.

Somatic gene therapy is carried out on somatic cells, meaning changes are not passed to patients' children.	Therapeutic gene therapy aims to ameliorate disease, rather than accentuate certain characteristics.

Boundary work (Gieryn 1991[9]) denotes the discursive delineation of scientific spaces. It is credibility-granting work, consolidating the epistemic authority of a given scientific practice through the ongoing work of refiguring its edges.

1800

CLINICAL HGT TRIALS COMPLETE OR ONGOING

HUMAN GENE THERAPY

HGT grew out of advances in microbiology (esp. recombinant DNA) in the late 1900s, and became a reality in 1990, when the first trial began on two children with a severe immune condition. The field met much hype and a surge of investment in the 1990s, but tangible successes (i.e. safe and effective therapies) proved slow to come. The new millennium saw 2 patient deaths in unrelated French and American trials, ostensibly shaking the field. Progress gradually became evident as the 2000s got underway, and today three gene therapy products have reached the market.

2 BIOETHICAL STANDARDS

Human gene therapy is governed by many of the same ethical standards as other experimental medico-scientific work. Many of these are derived from the Declaration of Helsinki, and enforced by a host of regulatory bodies. Standard ethical practice involves formalised *risk-benefit* analyses of a trial, full *informed consent* for participants, plus regular monitoring and reporting.

Implementing standards of this sort made the field of gene therapy governable by the assigned regulators. They have not, however, proven infallible. In the 1999 death of Jesse Gelsinger, for example, numerous issues were revealed including failure to report animal deaths and investigators conflicts of interest. Such failings occur in other fields, but appear here in a context of high scrutiny and concern.

3 THE ETHICAL IMPERATIVE

The ethical imperative makes it unthinkable for gene therapy, once technically possible, to be denied from those living with severe and otherwise incurable diseases. It enables safety concerns to be overridden by the ultimate ethos that suffering is untenable if a means to end it exists. This imperative has acted as an ethical engine, sustaining the field's momentum in the face of high profile patient deaths and periods of slow success.

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